

# The Application of Mind Mapping Method in Learning of Mathematics

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**Abstract.** The purpose of this research is to analyze the activity of learners during a learning with the application of mind mapping methods and analyzing the results of the study after implementing the of mind mapping methods. Type of this research is descriptive research with qualitative approach. Data retrieval is done by means of observation and tests. Observations made during instructional activities took place while tests were conducted on a post-test and test after implementation the learning mind mapping method. The average results of the data analysis the four aspects that were taken show that the activity of learners during a learning process included in the good category with an average of 81.74%. The most dominant activity is excited in learning activities with the percentage of 85.44%. The results of the study participants after the implementation of the learning with mind mapping method included in the category with very good percentage of 90.48% classical passing grade exceeds the criteria of passing grade classical that is 80%.

**Keywords:** learning mind mapping method, the activity of the students, the results of the study.

## INTRODUCTION

Math is a tool to develop ways of thinking human beings who are indispensable in the life of [1]. Subjects of mathematics is one the areas of study which occupied an important role in education. It can be seen from the time of lessons at school a lot more compared to other lessons, both in the implementation of education ranging from primary to high school.

Subjects mathematics rely heavily of how educators teach the students[2]. Implementation of the learning mathematics in fact most educators still using methods of lectures and exercises. Educators often have constraints in compiling learning methods which can stimulate learners to dare and suggested the idea. Because learners aren't conditioned to develop thinking and potential learners are not invited to construe the concepts and ideas. So that learners become lazy thinking independently and result in a weak understanding of the concept. Such things shows learners are less active in the learning activities. Most learning is done by educators have not been give a chance to the maximum on the learners to develop their ability of understanding the concept. The learning process only centered on the educators so that learners look less active in asking questions nor put forward ideas or opinions. So the activity of learners is not visible, this causes the learners are not motivated in following lessons in the classroom.

From those facts prove many learners who still feel difficulty solving problems in mathematics. There is an effort to help learners in overcoming those difficulties, one of which is the appropriateness of the selection of the learning methods used by educators in the learning process. Was supposed to be meaningful mathematics learning and make it easier for learners to be able to make mathematics become better. To run some of those strategies, requires learning methods so that learners get the results and perform a proper settlement. One of the methods of learning that supports is Mind mapping. Mind mapping is a logging method that uses visual reminder and graphic techniques with a combination of colors, words, images, and curved lines that can trigger memories easily, because of the natural fit with the flow of thinking learners themselves [3].

Method of learning mind mapping was first discovered by a scientist named Tony Buzan. Buzan argues that mind mapping is a way records the informations obtained by means of mapping so that it becomes more effective and meaningful as well as work with mind mapping involves both sides of the brain. That is because the mind mapping using pictures, colors and imagination (right brain) along with words, numbers, and logic (left brain). Mind mapping is more visually stimulating than traditional logging methods. There are seven steps in making the mind mapping, taht is: (1) Starting from the central part of the paper blank side length is placed horizontally. (2) Use of images or photos to a central idea. (3) Use of color. As for the brain, the same color Interestingly with the image. (4) connect the main branches to the central image and connect the branches level two and three to level one and two, and so on. (5) Make the hyphen line is curved, rather than straight lines. (6) Use one keyword for each line. (7) Use of images [3]. When these steps have been implemented will form a mind map in the form of code, lines, words, colors, and images (mind mapping) that will help the students in understanding the math materials. The existence of these problems then the researchers will apply methods of mind mapping in learning mathematics.

## METHOD

Type of this research is descriptive with qualitative approach. This research is qualitative, then the analysis of the data is non statistics. The technique of data collection conducted in this research is the observation and tests. Observations made at the time of learning activities taking place while the tests are performed twice before implementing methods of mind mapping and after

implementing mind mapping. It aims to look at the influence of learning results after implementing the methods of mind mapping. The data that appear in the form of words and not a series of numbers. Qualitative data analysis consists of three strands of activities that occur simultaneously, i.e. the reduction of data, data model, as well as withdrawals/verification conclusion[4].

## RESULT

### Analysis of the activity of learners during a Learning Mind Mapping Method

Observation the learning method of mind mapping in learning mathematics is implemented during the learning process takes place. The results of the observation activity learners are as follows on the Table 1.

Table 1. Analysis the Activity Of Learners

No	Aspects	Indicator	Percentage
1	Visual activities	Read a book or reference sources	84,44 %
		Observe	81,45 %
2	Oral activities	Ask a question	80,79 %
		Answer the question	81,22 %
		Discuss	79,50 %
3	Activities of hearing	Listen to explanation	78,30 %
4	Mental and Emotional activities	Interested in learning	85,44 %
		Responding to the opinions	82,78 %
Total			81,74 %

Of the 4 aspects of the activities as a whole above shows the average score 81.74% with good categories. Then it can be inferred that the learning mind mapping method that is above the minimum passing grade by good category. So learning with mind mapping method in this research is said to be successful. Learner activity in this respect is seen when observing the way learners learn to make mind mapping and at the moment the students map out what it will do and discuss. The learner activity seen from various aspects, ranging from the visual load indicator activities read the book sources and observing. Both these indicators is seen when learners discuss to create a concept map of the material that needs to be completed and then at the moment the students working on the given question.

The activity of learners in oral activities is on asking and answering of questions and discussion indicator. These indicators are seen at the time learners discuss. At the time of the activities the students active in asking and answering questions is clearly visible. Learners by using mind mapping methods and provided with learning resources look more active and all follow a prescribed learning lecturer.

The activity of learners on the hearing, is a time when the learners listen to explanations of the lecturer as well as questions and answers from his colleagues. The percentage of activity was 78.30%, this is because at the moment there are still activities educators explain some learners who are less noticed. While in the last aspect, is a aspects of mental and emotional activities is on

indicators of morale in learning as well as the opportunity to follow in the opinion. Not only the usual active learners who dominated activities with learning methods of mind mapping, but almost all the learners takes part actively in learning activities, this can be seen when there is a chance the opinion.

### Learning outcomes students After Learning Activity methods of Mind Mapping

On the research learning outcomes tests students performed 1 time. Learning outcomes students cognitive aspect. The cognitive aspect is determined by the value of the post-test and tests after implementing mind mapping. Following the results of his studies as follows:

Table 2. Analysis results average Learning learners

No	Value	
	Post-test	Mind Mapping
1	84,38 %	90,48 %

Based on table 2, it can be inferred that the learners to learn with passing grade for post-test is as much 84.38%. While for the average test results of learners after applied mind mapping is 90.48%. Based on the standard passing grade in school, is said to be complete if it has achieved  $\geq 80\%$ . Then the passing grade learning in the application of mind mapping in learning methods of math in this research have reached the standard passing grade as determined by the school. Based on the standard passing grade set out the Ministry of national education that learners are said to reach passing grade in learning if the learners have reached a value of more than 80%. Learning from the results obtained studying with passing grade learners who have achieved is 37 learners, and learners who do not thoroughly studied as much as 5 learners

So passing grade of classical learning in the application of mind mapping method has already achieved the standards set by the passing grade in Ministry of national education if compared with tests conducted prior to implementing the methods of mind mapping. If the views on learning outcomes learner, learning is successful because the students who are already familiar with the problems that are given so that learners can do it although sometimes still puzzled. Using mind mapping learners so knowing what the real precondition of questions students have received, so in doing so learners know the steps that must be applied.

This is in accordance with previous researchers i.e. [5] which says that there is a difference in the average of the results of learning between the experimental and the control class, and the average results of the experimental class in higher learning compared to the average of the results of the study on the class of the control. So there are significant effects by implementing methods of mind mapping in learning activities. As with mind mapping will facilitate learners to learn and know the origins or systematics work from reserved provided educators.

## CONCLUSION

The conclusion that can be drawn from the discussion that has been discussed in the previous chapter is the activity of learners during a learning process with mind mapping method included in the good category. This assessment is seen from 4 aspects of learning that is a visual activity, oral, listening to the emotional and mental as well as learners. This is demonstrated by the average percentage of the activity the learners during the two sessions was 81.74%. The highest activity percentage is excited in learning activities with the percentage of 85.44%. The results of learning math learners after application of the learning method of mind mapping is very good with passing grade learners to study post-test is as much 84.38%. While for the average test results of learners after applied mind mapping is 90.48%.

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